REMARKS/ARGUMENTS

In this amendment claims 8–10, 21, 36, 39 and 40 are cancelled without disclaimer or prejudice to future prosecution of the subject matter. Additionally, claims 1, 11, 22, 27, 29 and 33 were amended. Support for the amendments to independent claims 1, 11, 22, and 29 is found in the specification (*e.g.*, at p. 11, lns. 15–18), the figures showing the inner electrodes positioned external to the conduit (*e.g.*, Figs. 1 & 2, and p. 12, lns. 11–17), and in original claims 8-10. Support for the elastomeric material recited in amended claims 11, 18, 27 and 33 is found in the specification (*e.g.*, at p. 9, lns. 1–4).

Upon entry of this amendment claims 1–7, 11–20, 22–35, 37 and 38 will be pending. Reconsideration of the application is respectfully requested in light of the amendment, and the following remarks.

A. The Rejection of the Claims Under §102(b) is Addressed

Claims 1-8, 10-17, 19, 21-26, 28-32, 34, 36, 37, 39 and 40 were rejected under 35 U.S.C. 102(b) over U.S. Patent No. 5,376,878 to *Fisher*. Applicants respectfully disagree. Moreover, the claims as now amended have elements that are not found in *Fisher*.

1. Fisher did not describe Poly(dimethylsiloxane)

Fisher did not describe or suggest the use of poly(dimethylsiloxane) (or PDMS), to form any part of a particle counting and measuring device. *Fisher* described use of an etchable polymer such as polyamide (col. 8, lns. 6–14). However polyamide is not an elastomeric material. Polyamide is a rigid polymer with a Young's Modulus of stiffness of 2.5 x 10^9 Pascals (*i.e.*, closer to bone (9 x 10^9 Pa) than rubber (~10^7 Pa)). In particular, *Fisher* did not describe use of a silicone polymer such as PDMS.

2. Fisher did not describe a four-point electrode system

Moreover, *Fisher* did not describe a four-point electrode system having two inner electrodes and two outer electrodes. The reference described a three-point electrode system that includes a "first electrode" 20, a "second electrode" 22, and finally, a "third electrode" 14 that

divided the length the conduit apertures 12 into a first portion 28 and second portion 30 (see col. 6, lns. 55–66). Measurement signals generated by the three-point system were described as "biphasic" since the polarity of the voltage signal would reverse as particles moved from the first portion of the aperture to the second portion (see col. 5, lns. 22–31). In the "Advantages of the Current Invention" section, *Fisher* described the biphasic measurement signal as a particularly valuable advantage because it could be manipulated to minimize intrinsic noise in the signal: A mismatch between the shape or amplitude of the positive and negative phases for each particle passage, or an incorrect time relationship between the two phases indicates a spurious event, such as a coincidence or noise spike, and the pulse is rejected (see col. 10, lns. 56–66).

In contrast, four-point electrode system of the present invention does not generate a biphasic measurement signal. A pair of inner electrodes is positioned externally to the conduit, and thus does not divide it into a first and second portion (see Figs. 1 & 2, and p. 11, lns. 15–22). The four-point electrode configuration reduces the noise level in the measurement signal by reducing extraneous resistance arising from the reservoir fluid and the electrode-fluid interface. It does not compare signal patterns from opposite polarity phases of a biphasic signal to cancel spurious noise.

3. ***Fisher did not describe a functionalized surface***

Fisher also failed to describe a conduit functionalized to reduce or enhance absorption of particles to the surface, as recited in claims 6 and 16. The Office Action states that this element was described in *Fisher* at col. 7, lns. 1–5, and/or col. 8, lns. 6–14, but neither of those sections discussed functionalizing a conduit surface. The first passage did not discuss conduits at all, and the second passage described forming a first portion of a conduit pore through an etchable polymer like polyamide. But there was no discussion of functionalizing the surface of the polyamide, and specifically, no discussion of functionalizing the polyamide to reduce or enhance the absorption of particles on the conduit surface. Thus, *Fischer* lacks this element as well.

4. ***The claims are not anticipated by the Fisher reference***

As noted above, *Fisher* failed to describe at least two elements discussed in claim 1. Amended claim 11 also includes a four-point electrode system to measure the change in the electrical impedance in the conduit. Claims 22 and 29 have also been amended to include monitoring electrical current through or voltage across a conduit with a four-point electrode system. Thus, independent claims 1, 11, 22, and 29 all have at least one element that was not described in *Fisher*, making the claims allowable over the reference. Similarly, claims 2-8, 10, 12-17, 19, 21, 23-26, 28, 30-32, 34, 36-37, 39 and 40, which all depend from one of the independent claims, are allowable as well. For at least these reasons, withdrawal of the rejection of claims 1-8, 10-17, 19, 21-26, 28-32, 34, 36, 37, 39 and 40 under 35 U.S.C. 102(b) over *Fisher* is respectfully requested.

B. The Rejection of Claims Under §103(a) is Addressed

Claims 9, 18, 27 and 33 were rejected under 35 U.S.C. 103(a) over *Fisher* in view of U.S. Patent No. 4,607,526 to *Bachenheimer*. In addition, claims 20 and 35 were rejected under 35 U.S.C. 103(a) over *Fisher* in view of U.S. Patent No. 6,426,615 to *Metha*. These rejections are made moot by the amendment. The claims as amended include a four-point electrode system having two inner electrodes positioned externally to the conduit, and two outer electrodes. Thus, *even if, arguendo*, one of skill had motivation to change the materials from which the *Fisher* device is made, the resulting device would be entirely different from that now claimed.

As noted above, the particle measurement device in *Fisher* used a three-point electrode system with a "third electrode" 14 that divided the length the conduit apertures 12 into a first portion 28 and second portion 30 (see col. 6, lns. 55–66). This three-point system was described as providing a particularly valuable advantage to the device by generating a biphasic measurement signal that could be manipulated to minimize intrinsic noise (see col. 10, lns. 56–66). In contrast, the four-point electrode system utilizes four electrodes that are external to the conduit. The electrodes are positioned serially along the device reservoirs so that the conduit aperture lies between the inner electrodes. This allow the electrical resistance of the whole conduit to be sensed by the electrodes, and not split into two portions as described in *Fisher*.

The present four-point electrode configuration reduces the noise level in the measurement signal by reducing extraneous resistance arising from the reservoir fluid and the electrode-fluid interface, and does not generate a biphasic measurement signal.

There is no suggestion in *Fisher* that a four-point electrode system would be an acceptable substitute for the existing 3-point system. On the contrary, modifying the device in *Fisher* to have a four-point electrode system with two inner aligned substantially parallel to the length of the conduit would mean losing the biphasic measurement signal that was described as a particularly valuable advantage of the invention. Thus, if anything, combining a four-point electrode system with the particle measurement device in *Fisher* would render the invention unsatisfactory of its intended purpose, and indication of non-obviousness.

Neither *Bachenheimer* nor *Metha* remedy this deficiency in *Fisher*. *Bachenheimer* only described a two-point electrode systems (not shown) for counting particles moving through a channel (see col. 7, lns. 17–19). *Metha* described various complex electrode systems, having four, six, or more electrodes. But these systems show the inner electrodes aligned in a plane that's perpendicular to the length of the conduit (*see, e.g.*, Figs. 9 & 21). Like the third electrode in *Fisher*, these electrodes generate **biphasic** signals as particles moved from a first to second portion of the aperture (*see, e.g.*, Fig. 16 and the accompanying description at col. 16, lns. 21–43). There is no description or suggestion in *Metha* to align the inner electrodes parallel to the length of the aperture, eliminating the biphasic measurement signal. Accordingly, withdrawal of the rejection of claims under § 103(a) over *Fisher* in view of *Bachenheimer*, and *Fisher* in view of *Metha* is respectfully requested.

INTERVIEW REQUEST

Applicants respectfully request an interview with the Examiner to expedite the prosecution of the application.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

Respectfully submitted,

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